



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/369,510	08/06/99	HOSSACK	J 5050/584

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EXAMINER

CHOOBIN, M

ART UNIT

PAPER NUMBER

2721

DATE MAILED:

03/15/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/369,510

Applicant(s)

Hossack

Examiner  
Choobin Mahmood

Group Art Unit  
2721



☒ Responsive to communication(s) filed on Aug 6, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-16 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-16 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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### DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1- 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Rebecca Gandini (U.S. 5645066).

As to claim 1, A medical diagnostic ultrasound imaging method comprising:

(a) acquiring image data for at least two frames, each frame identified with a respective phase of a physiological cycle; (see Gandini U.S. PATENT 5645066, column 4, line 46-55)

(b) constructing a multi-phase, multi-frame data set from the image data by registering the image data based on image motion between the frames, (column 4, line 45-55)

© generating a plurality of images from the multi-frame data set, each image associated with a respective phase of the physiological cycle; and (column 2, line 65-67 and column 4, line 4-10)

(d) displaying the images in sequence to a user.(column 2, line 61-65)

As to claim 2, The method of Claim 1 (see above) wherein (b) comprises:

(bl) associating a separate position with each frame of image data; and(column 4, line 25-45 and column 5, line 66 through column 6, line 10)

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(b2) creating a plurality of separate multi-frame data sets included in the multi-phase, multi-frame data set, each separate multi-frame data set identified with a respective phase of the physiological cycle.(column 7, line 40-45)

As to claim 3, The method of Claim 1(see above) wherein (b) comprises:

bl) associating a separate position with each frame of image data associated with one selected phase of the physiological cycle; and(column 5, line 66 through column 6, line 10)

(b2) using the positions associated with the one selected phase of the physiological cycle to create the multi-frame, multi-phase data set for all of the image data.(Column 2, line 35-45)

As to claim 4, The method of Claim 1 ( see claim 1 )wherein the multi-phase, multi-frame data set constructed in (b) comprises a 3-D data set.(column 1, line 5-9)

As to claim 5, The method of Claim 1 (see above) wherein the multi-phase, multi-frame data set constructed in (b) comprises a extended field of view data set.(column 6, line 40-55)

As to claim 6, A medical diagnostic ultrasound imaging means comprising:  
means for acquiring image data for at least two frames, each frame identified with a respective phase of a physiological cycle; means for constructing a multi-phase, multi-frame data set from the image data, said constructing means comprising means for registering the image data based on image motion between frames; means for generating a plurality of images from the multi-frame data set, each image associated with a respective phase of the physiological cycle; and means for displaying the images in sequence to a user.(see above)

As to claim 7, The invention of Claim 6(see above) wherein the constructing means

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comprises:

means for associating a separate position with each frame of image data; and means for creating a plurality of separate multi-frame data sets included in the multi-phase, multi-frame data set, each separate multi-frame data set identified with a respective phase of the physiological cycle.(see above)

As to claim 8, The invention of Claim 6(see above) wherein the constructing means comprises:

means for associating a separate position with each frame of image data associated with one selected phase of the physiological cycle; and means for using the positions associated with the one selected phase of the physiological cycle to create the multi-phase, multi-frame data set for all of the image data.(see above)

As to claim 9, The invention of Claim 6 (see above) wherein the multi-phase, multi-frame data set comprises a 3-D data set.(see above)

As to claim 10, The invention of Claim 6(see above) wherein the multi-phase, multi-frame data set comprises a extended field of view data set.(see above)

As to claim 11, A medical diagnostic ultrasound imaging method comprising:

- (a) acquiring image data for at least two frames, each frame identified with a respective phase of a physiological cycle;
- (b) generating a plurality of extended field of view images from the image data, each image associated with a respective phase of the physiological cycle; and

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© displaying the images in sequence to a user.(see above)

As to claim 12, the method of Claim 11 wherein (b) comprises:

(b1) associating a separate position with each frame of image data; and

(b2) creating a plurality of separate extended field of view data sets, each data set identified with a respective phase of the physiological cycle.(see above)

As to claim 13, The method of Claim 11 wherein (b) comprises:

(b1) associating a separate position with each frame of image data associated with one selected phase of the physiological cycle; and

(b2) using the positions associated with the one selected phase of the physiological cycle to create the multi-phase extended field of view data set for all of the image data.(see above)

As to claim 14, A medical diagnostic ultrasound imaging system comprising:

(a) means for acquiring image data for at least two frames, each frame identified with a respective phase of a physiological cycle;

(b) means for generating a plurality of extended field of view images from the image data, each image associated with a respective phase of the physiological cycle; and

© means for displaying the images in sequence to a user.(see above)

As to claim 15, The invention of Claim 14 wherein the generating means comprises: image data; and means for associating a separate position with each frame of means for creating a plurality of separate extended field of view data sets, each data set identified with a respective phase of the physiological cycle.(see above)

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As to claim 16, The invention of Claim 14 wherein the generating means comprises: means for associating a separate position with each frame of image data associated with one selected phase of the physiological cycle; and means for using the positions associated with the one selected phase of the physiological cycle to create a multi-phase extended field of view data set for all of the image data.(see above)

### **Other prior art cited**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5488952 to Schoolman is cited Stereoscopically display three dimensional ultrasound imaging.

U.S. Patent 6004270 to Urbano et al is cited for Ultrasound system for contrast agent imaging and quantification in echo cardiography using template image for image alignment..

U.S. Patent 4737921 to Goldwasser is cited for three dimensional image display system.

U.S. Patent 6019725 to Vesely et al is cited for three dimensional tracking and imaging system.

U.S. Patent 5957845 to Holley et al is cited for Gated ultrasound imaging apparatus and method.

U.S. Patent 5976088 to Urbano et al is cited for Ultrasound imaging system and methods of increasing the effective acquisition frame rate...

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U.S. Patent 5913823 to David Hedberg et al is cited for Ultrasound imaging method and system for transmit signal generation for an ultrasonic imaging system capable of harmonic imaging.

## **CONTACT INFORMATION**

Any inquiry concerning this communication from the examiner should be directed to Mahmood Choobin whose telephone number is (703) 306-5787.

The examiner can normally be reached on Monday through Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

Any response to this action should be mailed to:

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or faxed to:

(703) 308-9051, (for formal communications intended for entry)

(703) 308-5397 (for informal or draft communications, please label "PROPOSED"  
or "DRAFT")

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA., Sixth Floor (Receptionist).



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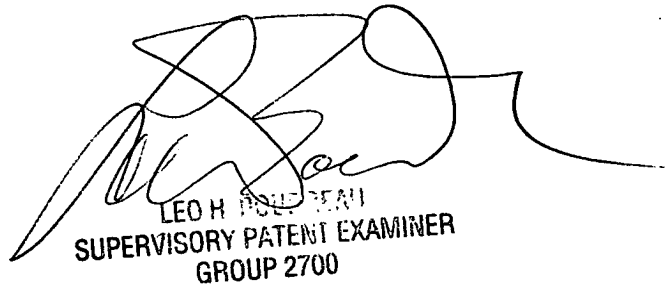
Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703)305-3900.

Mahmood Choobin

Patent Examiner

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March.10, 2000



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SUPERVISORY PATENT EXAMINER  
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